DESCRIPTIONS OF AUSTRALIAN EOLIDACEA (MOLLUSCA: OPISTHOBRANCHIA)

2. THE GENERA *NOSSIS, EUBRANCHUS, TRINCHESIA* AND *TOORNA*

By ROBERT BURN ‡

Text figures 1-21.

SUMMARY

A new Acleioproct Cuthonid genus *Toorna* is described from the Australian fauna together with four new species, *Nossis westralis*, *Eubranchus rubeolus, Trinchesia sororum* and *Toorna thelmae*. Supplementary notes are added for *Trinchesia viridiana* and *T. catachroma* (Burn, 1962, 1963). *Nossis* Bergh (1902) is shown to be a Pleuroproct Coryphellid. *Nossis* and *Eubranchus* are new generic records for Australia.

INTRODUCTION

Subsequent to publication of the first part of this series (Burn, 1963), the writer read with great interest of several proposals to stabilize various Eolidacean generic taxa. Where these effect this part, the nomenclature has been used accordingly. Thus *Trinchesia* is to replace *Catriona*, and *Eubranchus* conforms with its new type concept (Lemche, 1964A, 1964B).

The material examined for this research has been deposited in either the National Museum of Victoria, Melbourne (N.M.V.), or the Western Australian Museum, Perth, depending upon the State of origin. Unless otherwise stated, all material has been collected by the writer.

The writer wishes to thank in particular the Trustees of the Science and Industry Endowment Fund, C.S.I.R.O., for a grant in aid of research on the Australian opisthobranchs. This paper is part of a comprehensive study of the Opisthobranchia of Australia being undertaken by the writer. Due acknowledgment is also made to the Directors and Molluscan Departments of the National Museum of Victoria, Melbourne, and the Australian Museum, Sydney, for assistance with literature and material, and advice in the final preparation of this paper.

SYSTEMATIC SECTION

ORDER NUDIBRANCHIA

SUBORDER EOLIDACEA

SUPERFAMILY PLEUROPROCTA

The primary characteristic of this superfamily is the lateral position of the anus below or outside the branches of the liver. Generally a strong pallial or notal brim separates the sides of the body from the notum but in some of the more advanced genera and species the brim is all but non-existent. There are two families (Odhner, 1939: 50, 54): Notaeolidiidae with indistinct cerata forming a fringe along each side of the body, the renal pore beside the genital aperture and two or more denticulate lateral teeth; Coryphellidae with distinct cerata, the renal pore between the anus and the genital aperture and one (exceptionally two) lateral tooth.

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FAMILY CORYPHELLIDAE

The few genera of this family are *Coryphella* Gray 1850, *Coryphellina* O'Donoghue 1929 and *Nossis* Bergh 1902. *Chlamylla* Bergh (1885; 1890: 36) is not well defined and *Himatella* Bergh (1890: 36) now *Himatina* Thiele (1931: 453) is a synonym of *Coryphella* (Marcus, 1961: 48). The first two genera are closely related, the former has simple or knotty, the latter posteriorly papillate rhinophores; both genera have the cerata in straight rows in the liver groups. In *Nossis*, the rhinophores are perfoliate and the cerata rise from curved peduncles arranged fan-like in the liver groups.

Genus *NOSSIS* Bergh (1902: 210).

Pleuroproct Eolidacea with a triseriate radula (median and lateral teeth denticulate) and numerous rows of conical denticles on the masticatory borders; with perfoliate rhinophores and tentaculiform foot corners; with unarmed penis; right liver with up to five fan-like peduncles of cerata.

Type species by monotypy: *Nossis indica* Bergh (1902: 210).

Bergh (1902: 209-210) placed *Nossis* in his family Flabellinidae along with the genera *Flabellina* Cuvier 1830, *Pteraeolidia* Bergh 1876, *Samla* Bergh 1900 and *Calma* Alder and Hancock 1855. According to the contemporary classification of the Eolidacea, *Flabellina* and *Samla* together with *Calmella* Eliot (1906: 370) comprise the triseriate pedunculate Acleioprocta Flabellinidae, *Calma* comprises the uniseriate pedunculate Acleioprocta Calmidae, while *Pteraeolidia* belongs to the cuspidate Cleioprocta Favorinidae.

Nossis has a well-developed pallial or notal brim with the anus opening below; therefore it is a Pleuroproct (Odhner, 1939: 50) and cannot be allied with any of the abovementioned genera.

There is a marked instance of generic convergence between *Nossis*, the Acleioproct Cuthonid *Indocratena* Odhner 1940 and the Cleioproct Favorinid *Pteraeolidia* Bergh 1876. In common the three genera have a long slender body, cerata set on fan-like peduncles, perfoliate rhinophores and tentaculiform foot corners. Evidently all three occupy a similar ecological habitat.

Nossis westralis sp. nov.

Figures 1-5.

Material examined: WESTERN AUSTRALIA: Nichol Bay, north of Roebourne, 117° East, 20°40′ South, 22 November 1959, 1 specimen, collector not known, W.A.M. 61-64.

Habitat: Collected along with the dorid *Hypselodoris obscura* Stimpson, therefore probably found under or crawling on rocks in the littoral.

Description: The unique holotype measures 17 mm. in length, 3 mm. in breadth across the notum and 2 mm. high. The cerata are up to 3 mm. long and 0.7 mm. in diameter, the sole is about 1 mm. wide. The slug is a uniform pale blue-green through preservation in the same tube with the predominantly blue *Hypselodoris obscura*, paler cream cnidosacs can be seen here and there among the cerata. The living slug is possibly of a cream colour.

The body (Fig. 1) is long and slender, the small head gives rise to the wide notal brim that is most prominent between the 10 protruding liver groups on each side. Rhinophores (*h*) small, stout and finely (about 30) perfoliate. Tentacles (Fig. 1-2, *d*) short with fine tips and stout collar-like bases. Foot-corners tentaculiform, grooved anteriorly for their whole width; sole narrow with wide thin margins; tail very narrow. Cerata (Fig. 3) widest subapically, sides straight, cnidosacs (*c*) small, dome-like. The cerata stand in single row upon small fan-like peduncles the ventral end of which hangs free and generally carries 2-3 small cerata buds; the total number of cerata on each peduncle varies from 7-9 in the anterior ones but decreases to 3, 2 and 1 in the small posterior groups.

The right liver comprises a group of 5 peduncles. Shortly behind this is a group of 3 peduncles (first posterior liver group right side) behind which are 8 progressively diminishing peduncles. The genital aperture (Fig. 2, *b*) opens on a low papilla below and between the fourth and fifth peduncles of the right liver. The anus (*a*) opens in front of the lower end of the attachment of the first peduncle, first posterior liver group right side, below the notal brim.

The pale yellow 1 mm. long pyriform jaws (Fig. 4) are very delicate and greatly swollen; as in *N. indica* Bergh (1902: 211) the radular sheath projects posteriorly beyond the jaws. The masticatory borders bear up to 5 series of minute conical denticles (*i*). The radula (Fig. 5) contains 35 series of 1.1.1 teeth including 2 developing series. The broad median tooth (*f*) has a short cusp not protruding beyond the 6-7 lateral denticles each side. The equally broad lateral teeth (*g*) are longer than the median teeth, the curved cusp is finely pointed and on the inner edge near the base are three small denticles.

The penis is unarmed.

Discussion: Hitherto *Nossis* Bergh (1902: 210) has been represented by the type species *N. indica* Bergh (loc. cit.) only. *N. westralis* differs from *N. indica* by a greater number of liver groups and peduncles of cerata, fewer series of denticles on the masticatory borders and differently shaped lateral teeth with fewer denticles.

The anal position in *N. indica* is said to be "between first- and second-third parts of the length of the body" (loc. cit.: 211), a position not readily comparable with that of in front of the first posterior liver group right side as in *N. westralis.* But Bergh's specimens were much smaller (9 and 11 mm. long) and probably had not developed the numerous posterior peduncles. Thus it is suggested that in actual fact the anus opens somewhere below the first posterior liver group right side in *N. indica.*

The specific taxon '*westralis*' is from the colloquial corruption 'Westralia' derived from Western Australia. This species is one of the few Eolidaceans included in the collection of Opisthobranchia of the Western Australian Museum sent to the writer for identification and to be reported upon elsewhere.

SUPERFAMILY ACLEIOPROCTA
FAMILY EUBRANCHIDAE

Not previously recorded from Australia, this family is very similar to the Cuthonidae except that the radula is triseriate. The genera of the family are few and fairly well delimited.

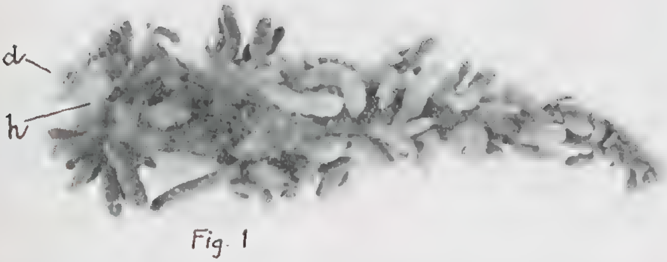

Fig. 1.

Genus *EUBRANCHUS* Forbes (1838: 5).

Acleioproct Eolidacea with a triseriate radula (median tooth denticulate, lateral teeth plate-like without denticles) and a single row of denticles on the masticatory borders; with simple rhinophores and rounded, angulate or tentaculiform foot corners; with penial gland and unarmed penis; right liver with 2-6 simple rows of cerata.

This concept of the genus follows the submissions of Lemche (1964A: 40-44) in which case the type species will be *Eolis farrani* Alder and Hancock (1844: 164).

The only readily visible external characteristics to effectively separate *Eubranchus* from such Cuthonid genera as *Cuthona* and *Trinchesia* that live on the same coastline are (i) the greater thickness of the point of attachment of the cerata to the body and (ii) the position of the tentacles back from the front of the head.

Eubranchus rubeolus sp. nov.
Figures 6-10.

Material examined: VICTORIA: Point Lonsdale, Port Phillip Heads, 144°37′ East, 38°18′ South, 4 November 1963, 1 specimen, N.M.V. reg. no. F23,458.

Habitat: On tips of a brown alga at low tide.

Description: The living slug was 7 mm. in length; preserved it is 3 mm. long including the turned up tail, 1.1 mm. wide and 1.1 mm. high. The medianly folded sole is 0.7 mm. wide over the thickened margins, the cerata are up to 1.1 mm. long. Alive the body colour was white with shining yellow edges to the foot and head, the rhinophores and tentacles were dark red except for a subapicial yellow band and a white cap. On the notum there were 3 round or elongate dark red patches; 3 patches (Fig. 6, *m*) each side correspond with the spaces between the notal patches plus one below the rhinophores. Cerata heavily pigmented; digestive gland dark red for lower four-fifths, white above; cnidosacs white; the skin over the dark red digestive gland is red, over the white part and above it is pale gold with subepidermal white pigment cells. Preserved the coloration consists of yellow body and yellow capped dark red cerata.

Body (Fig. 6) slender; head as wide as body, rounded in front; rhinophores long, tapering and smooth; tentacles short, tapering and round tipped. Foot-corners rounded, sole as wide as head anteriorly; tail long and slender, round tipped. Cerata (Fig. 7) stoutly fusiform, point of attachment thick; cnidosacs (*c*) small, slender fusiform. Right liver with 2 rows (or a broken arch) of 3, 2 cerata behind which are 3 rows of 3, 2, 2 cerata.

The genital aperture lies below and between the 2 rows of the right liver. The anus (Fig. 6, *a*) opens in front of the dorsal ceras of the first row of the posterior liver right side.

The pale yellow, very delicate 0.7 mm. long jaws (Fig. 8) are elongate; the masticatory borders (*i*) are short with 8-9 overlapping denticles somewhat like those of *Dondice occidentalis* (Engel, 1927; Marcus, 1958: 64, fig. 99). The colourless radula (Fig. 9) contains 95 rows of 1.1.1 teeth. The median tooth (*f*) is small, its cusp insignificant with 3 denticles each side. Each lateral tooth (*g*) is about three times as wide as the median tooth, the cusp at the first quarter is finely pointed and a small notch at the first third is present in the cutting edge.

The short cylindrical penis (Fig. 10, *j*) narrows at the tip but is unarmed. The male atrium (*l*) everts with the penis.

Discussion: Eleven species of *Eubranchus* are listed by Baba (1960: 299), one of which, *E. montraveli* Risbec (1937; 1953: 139), has a penial stylet and therefore cannot be retained in the genus, while another *E. cingulatus* (Alder and Hancock, 1847) is possibly identical with *E. pallidus* (Alder and Hancock, 1842; Lemche, 1935: 144, 1964A: 41). To be added to Baba's list are the species *E. farrani* (Alder and Hancock, 1844; Lemche, 1964A: 41), *E. falklandica* (Eliot, 1907: 353), *E. horii* and *E. misakiensis* Baba (1960: 300). Should the latter species have a penial stylet, it could well be placed in the genus *Capellinia,* the species of which have similar knobbed cerata and penial stylet.

E. rubeolus has only 2 rows of cerata in the right liver with the genital aperture below and between them; in this regard it is similar to *E. rupium* (Moller, 1842; Lemche, 1935: 144, fig. 8a), *E. agrius* Marcus (1959: 72), *E. misakiensis* Baba (1960: 300) and probably *E. falklandica* (Eliot, 1907: 353) which has 6 groups of 4 cerata on each side. Greatly alternating posterior liver rows and a Greenland habitat separate *E. rupium* from the new species; smaller size, differently shaped jaws and radular teeth separate *E. agrius;* tentaculiform foot-corners, the mid-length knobs on the cerata and the peculiar shape of the jaws separate *E. misakiensis;* fewer rows of teeth and narrow triangular lateral radular teeth separate *E. falklandica.*

The great number (95) of rows of teeth in the radula effectively separates *E. rubeolus* from the other species of Baba's list. In colouration, the new species is very much like a figure of a Mediterranean species (Pruvot-Fol, 1951: pl. 4, fig. 2) identified as *E. tricolor* Forbes (1838).

The specific name *rubeolus* refers to the red spotted or measled patterning, from *Rubeola* the medical name of the disease commonly called measles.

FAMILY CUTHONIDAE

SUBFAMILY TERGIPEDINAE

The Tergipedinae are distinguished from the Cuthoninae by the presence of an apicial stylet on the penis (Burn, 1963: 13) and by the greater simplification of the liver ramifications (Odhner, 1939: 75). Based upon the form of the right liver and to a lesser extent the shape of the radular tooth, the genera of the subfamily may be distinguished by the following key.

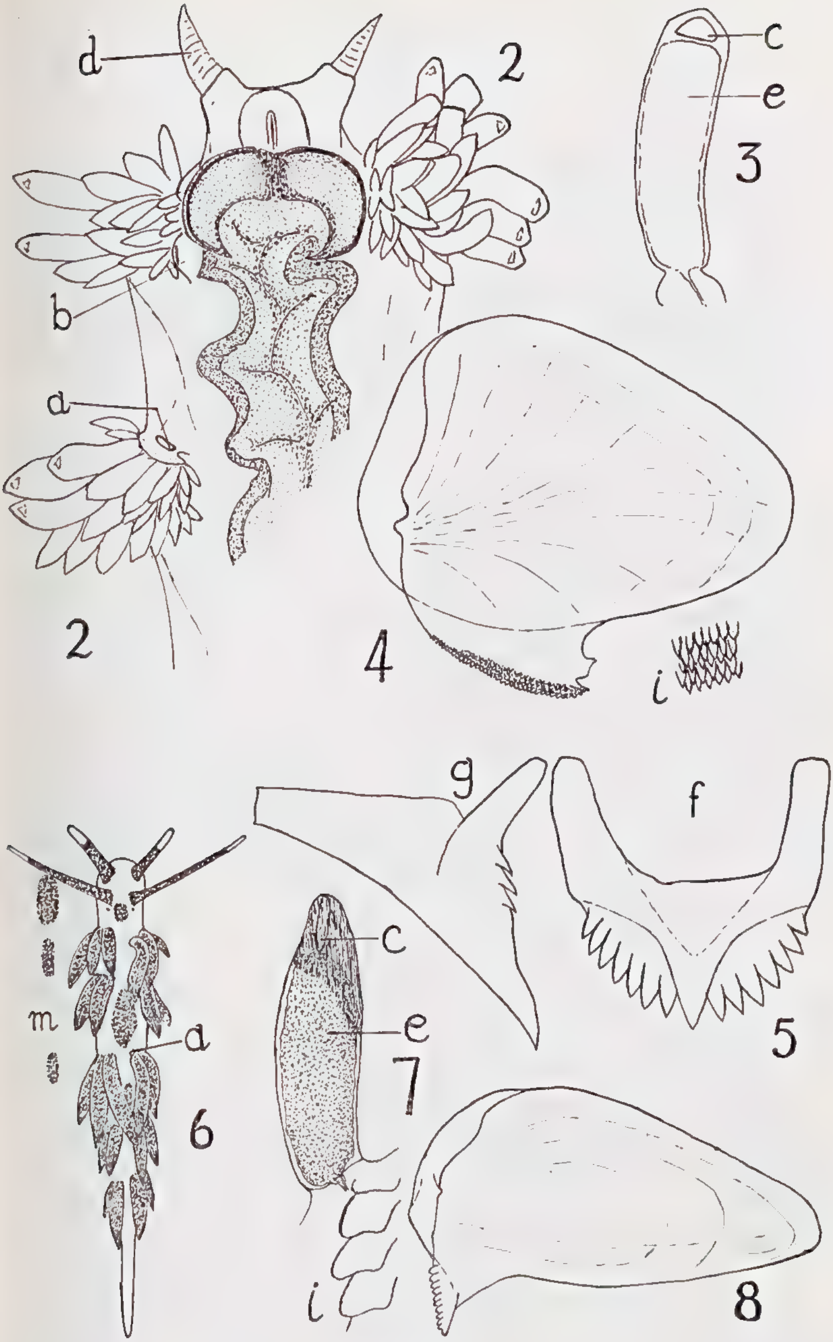

Fig. 2 to 8.

Three (rarely 2) or more cerata in 1-5 rows .... 1.

Two cerata in 2 rows, velum replacing tentacles:
Tenellia A. Costa (1866).

One ceras in 1-3 rows .... 3.

1. Foot-corners rounded or angulate, radular cusp shorter or not longer than lateral denticles .... 2.

   Foot-corners tentaculiform (or rounded), radular cusp longer than lateral denticles .... *Toorna* gen. nov.

2. Radular tooth anteriorly convex, base of cusp on same line as lateral denticles, masticatory border denticulate .. *Trinchesia* Ihering (1879).
   Radular tooth anteriorly concave, base of cusp protruding beyond rear edge of tooth, minute secondary lateral denticles present, masticatory border with bunches of bristles:

   Catriona Winckworth (1941).

3. Three rows in right liver .... *Subcuthona* Baba (1949).

   Two rows in right liver, velum replacing tentacles:

   Embletonia Alder and Hancock (1851).

   One row in right liver .... *Tergipes* Cuvier (1805).

According to Lemche (1964B), the genus *Trinchesia* Ihering (1879) has priority over and should replace *Catriona* auct. However, as both nominal genera are founded on different type species, *Catriona* Winckworth (1941) does not fall within the synonymy of *Trinchesia*. *Catriona* Winckworth is here maintained as a separate genus characterized by (i) the anteriorly concave radular teeth with the base of the cusp protruding beyond the rear edge and minute secondary denticles between the lateral denticles, (ii) the bunches of bristles on the masticatory borders of the jaws, and (iii) the elongate spermatheca and stalk opening directly into the female aperture. The liver ramifications and genital organs of the type species, *Eolis aurantia* Alder and Hancock (1842: 34) have been figured by Odhner (1929: 19, fig. 15; 1939: 74, fig. 41). Only one other species is known, *C. maua* Marcus and Marcus (1960B: 177).

Genus *TRINCHESIA* Ihering (1879: 137).

According to the earlier research of the writer on *Catriona* auct. (Burn, 1963), now displaced in favour of *Trinchesia* (Lemche, 1964B), this genus is characterized as follows:

Acleioproct Eolidacea with a uniseriate radula in which the cusp is shorter or only as long as the lateral denticles, and with a single row of denticles on the masticatory borders; with simple (rarely annulate or perfoliate) rhinophores and rounded or angulate foot-corners; with penial gland and stylet; right liver with 1-5 simple rows of 3 (rarely 2) or more cerata.

Type species by subsequent designation (Pruvot-Fol, 1954: 380): *Doris caerulea* Montagu (1804: 78).

The recently proposed subgenus *Eurycatriona* Burn (1963: 13) has as its type species *Montagua viridis* Forbes (1840; Odhner, 1939: 72, fig. 37-40). Lemche (1964B: 53) considers *M. viridis* to be identical with *D. caerulea;* therefore *Eurycatriona* is a very junior objective synonym of *Trinchesia*, both as a genus and a subgenus.

The two species formerly ascribed to *Catriona*, *C. viridiana* and *C. catachroma*, are here transferred to *Trinchesia*, and a third species, *T. sororum*, is described below.

Trinchesia viridiana (Burn).

Catriona viridiana Burn, 1962: 111, fig. 13.

Catriona (Eurycatriona) viridiana Burn, 1963: 17, fig. 7-10.

Material examined: VICTORIA: Point Lonsdale, Port Phillip Heads, 14 February 1964, 1 specimen, N.M.V. reg. no. F23,462.

Habitat: Under stone at low tide.

Discussion: The colouration of an 8 mm. long slug from this new locality was yellow-green body with the tentacles and rhinophores distally half green; the cerata had dark green digestive glands topped by small yellow cnidosacs and the whole overlaid by minute white ceratal glands. In other respects, the slug agreed completely with those previously studied.

The discovery of this species at Point Lonsdale, some 40 km. east of the type locality, Torquay, indicates that it is probably widespread along at least the central Victorian coastline.

Trinchesia catachroma (Burn).

Catriona (Eurycatriona) catachroma Burn, 1963: 15, fig. 1-6.

Material examined: VICTORIA: Point Danger, Torquay, 1 December 1963, 1 specimen, N.M.V. reg. no. F23,459; Point Lonsdale, Port Phillip Heads, 22 September 1963, 2 specimens, N.M.V. reg. no. F23,460, 2 January 1964, 1 specimen, N.M.V. reg. no. F23,461.

Habitat: Crawling on brown algae in rock pools or channels at low tide.

Discussion: This additional material shows the species to be fairly constant in coloration. The three Point Lonsdale specimens were identical with the Torquay types except that the cerata had an apicial yellow cap above the distal yellow band, while at the lower third there was another yellow band. Between the two bands, but only on the anterior side, were a few yellow spots and patches. One Point Lonsdale specimen was 11 mm. long alive.

The distribution of this species is probably the same as that of *T. viridiana*. Point Lonsdale is a new locality.

Trinchesia sororum sp. nov.

Figures 11-15.

Material examined: VICTORIA: Point Lonsdale, Port Phillip Heads, 144°37′ East, 38°18′ South, 22 September 1963, 1 specimen, N.M.V. reg. no. F23,463.

Habitat: Crawling on brown alga in large pool on rock platform.

Description: In life the only slug was about 7 mm. long; preserved it is 3.4 mm. long, 1.2 mm. wide and 1.7 mm. high. The sole is 0.5 mm. wide, the cerata are up to 1 mm. long. The living slug had a translucent white body, the tentacles and rhinophores had purple lower halves, the latter with a purple band at the third quarter. The cerata were transparent with orange veined red digestive glands and white cnidisacs. Preserved, the slug is dull plum colour.

Body (Fig. 11) slender and high, head narrow; tentacles short, distally swollen and rounded; rhinophores inversely club-shaped with narrowest part at distal third, distally swollen and rounded. Foot-corners rounded, narrower than head; tail short, tip rounded. Cerata (Fig. 12) cylindrical with narrower bases and a swelling at the lower part of the cnidosac, conical above; digestive glands (*e*) distinctly (9-10) lobed with alternating venation between; cnidosacs (*c*) slender pyriform, widest at lower third, about one-third total cerata length. Right liver with 3 simple rows of 2, 3, 4 cerata, posterior liver each side with 4 rows of 2, 3, 3, 2 cerata.

The genital aperture lies below the space of the second and third rows of the right liver. The anus (Fig. 11, *a*) is anterior-dorsal to the first ceras of the first row of the posterior liver right side.

The pale horn 0.9 mm. long jaws (Fig. 13) are elongate trigonal, delicate and very little thickened anteriorly. Masticatory borders with 6 pointed denticles, the foremost 3 smaller. The radular teeth were black before boiling in Na OH; afterwards they were colorless. The 24 teeth (Fig. 14) have a fairly wide cusp not longer than the 5 lateral denticles each side.

The short, broad penis (Fig. 15, *j*) that protrudes into the male atrium (*l*) has an 0.1 mm. long, colourless, curved stylet (*n*). The stylet tip is jagged. No penial gland enters either the base of the penis or the male duct close to the penis.

Discussion: *T. viridiana* (Burn, 1962: 111) occurring at the same locality as this new species also has 3 rows of cerata in the right liver, but differs from it in the shape of the jaws and radular teeth, the number of radular teeth and the yellow and green coloration. Similarly, species formerly differentiated from *T. viridiana* (Burn, 1963: 17) are separated from *T. sororum* by the purple pigment on the tentacles and rhinophores, the orange-veined red digestive glands of the cerata and the small number of denticles on the masticatory borders.

The specific name *sororum*, Latin for "of the sisters", is selected to honour Misses F. and M. Murray, Melbourne, whose able collecting has provided the writer with much Victorian opisthobranch material.

TOORNA gen. nov.

Acleioproct Eolidacea with a uniseriate radula in which the cusp is longer than the lateral denticles, and with a single row of denticles on the masticatory borders; with simple or semi-annulate rhinophores and rounded or tentaculiform foot-corners; with penial stylet and long cylindrical vagina; right liver with 3-6 rows of 3 or more cerata.

Type species: *Toorna thelmae* sp. nov.

It is doubtful whether semi-annulate rhinophores and tentaculiform foot-corners are generic characteristics. In the closely allied genus *Trinchesia*, semi-annulate rhinophores are a specific characteristic of *T. pinnifera* (Baba, 1949: 99, 175). On the other hand, annulate rhinophores can be artificially induced in *T. caerulea* (Montagu, 1804) by unusually warm sea temperature (Lemche, 1964B: 54). Normal rhinophores of *T. caerulea* are smooth and cylindrical, i.e., simple. Consequently, species with simple rhinophores should not be excluded from the new genus.

Thus the writer includes the simple rhinophored *Catriona beta* Baba and Abe (1964: 10) in *Toorna* even though it lacks tentaculiform foot-corners. The primary factor for this generic placement is that the prominently cuspidate radular teeth are almost identical with those of *T. thelmae*.

The genital organs of *T. thelmae* have been examined by dissection of the paratype; those of *T. beta* are known from a brief description and three diagrammatic figures (Baba and Abe, 1964:10, pl. 1, figs. 4-6). Both species have apicial stylet, penial gland and prostatic portion of the male duct, and a long cylindrical vagina surmounted by an obliquely angled spermatheca in the female ducts. This formation of the vagina and

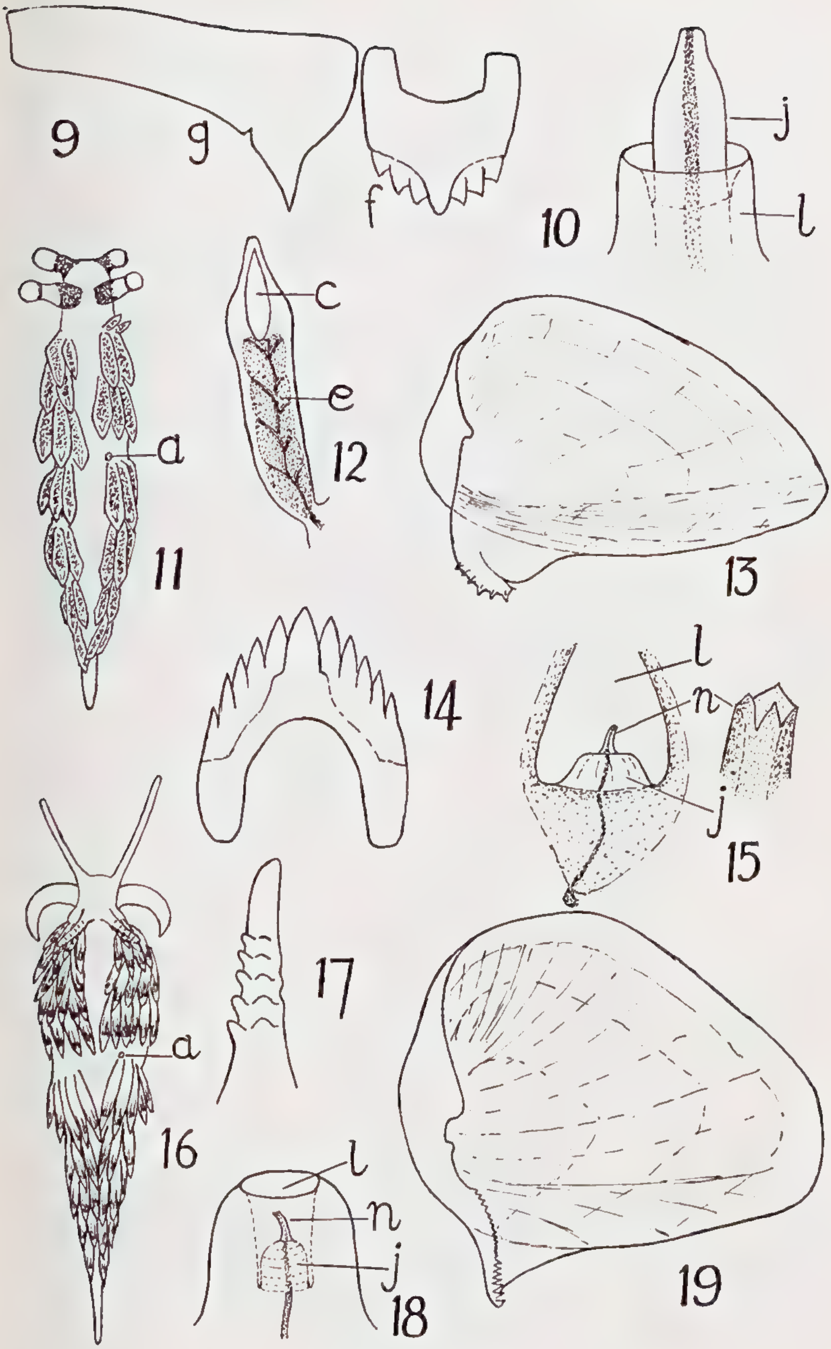

Fig. 9 to 19.

spermatheca is not known in *Trinchesia* or *Catriona* and effectively separates *Toorna* from either genus.

The combination of the characteristics of the genital organs and the prominently cuspidate radular teeth justifies the establishment of a separate generic taxon for these two species.

Toorna is an Australian aboriginal word meaning "sea-slug", probably referring to the bêche-de-mer of commercial value and not to a mollusc.

Toorna thelmae sp. nov.

Figures 16-21.

Material examined: VICTORIA: Point Lonsdale, Port Phillip Heads, 144°37′ East, 38°18′ South, 22 September 1963, 1 specimen, N.M.V. F23,464 (holotype); 24 October, 1964, 1 specimen, author's collection (paratype).

Habitat: Crawling on brown alga in pool on rock platform.

Description: Living slugs measure about 10 mm. in length. The preserved holotype is 4 mm. long, 0.8 mm. wide and 1 mm. high. The cerata are up to 1.3 mm. long; the narrow sole is 0.5 mm. wide at mid-length, 1 mm. across the foot-corners. It had a translucent pink body, darker about the head and tentacles; the rhinophores were pink with the upper half opaque white and the annulae yellow. There were two pale blue patches in front of, one between, two behind and one each side of the rhinophores; smaller pale blue spots occur on the tentacles and along the tail crest. Cerata with orange digestive glands and white cnidosacs; epidermally there was a pale greenish-yellow subapicial band from which descend 4-6 short blue-white stripes. Preserved, coloration is pale pink.

Body (Fig. 16) anteriorly wide, tapering behind; tentacles long and slender; rhinophores (Fig. 17) rather short, tapering, with 5 transverse rows of 3 semi-circular lamellae concentrated in the posterior middle half. Foot-corners long and narrowly tentaculiform, sole wider than head, tail long and tapering to a fine point. Cerata (Fig. 20) slender fusiform, slightly constricted at the distal quarter; cnidosacs (*c*) elongate conical, about one quarter length. Right liver with 5-6 simple rows of 2, 4, 4, 4, 5, 6 cerata behind which are 5 rows of 6, 5, 4, 4, 3 cerata.

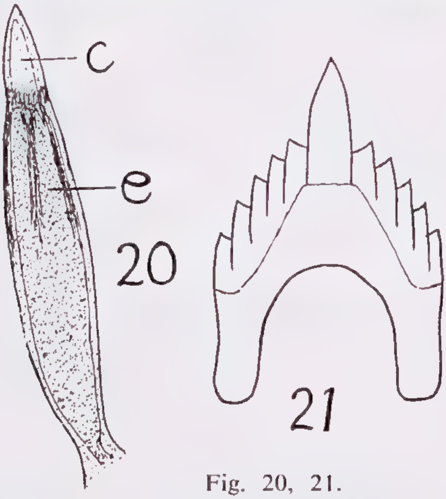

Fig. 20, 21.

The genital aperture is below the fourth row of the right liver. The anus (Fig. 16, *a*) is anterior to the first ceras of the first row of the posterior liver right side.

The yellow 0.9 mm. long jaws (Fig. 19) are broadly pyriform and strengthened anteriorly. The masticatory borders bear 16 pointed denticles. The colourless radula (Fig. 21) contains 33 teeth, each with a long prominent cusp and 5 small denticles each side. The cusp is strongly hooked at the tip.

The male duct of the genital organs is narrow and short when it branches from the hermaphrodite duct. Immediately thereafter occurs a voluminous prostatic dilation which narrows ectally to a short vas deferens below entering the wider long muscular penial sheath. A thin walled pyriform penial gland opens into the penial sheath at the inner end. In the tip of the penial sheath is a small eversible socket, bearing on its inner face a slender curved hyaline stylet (fig. 18, *j*). The female aperture lies beside but quite distinct from the male aperture; there is no common genital atrium. Just inside the aperture is a major bifurcation, the oviduct to the female gland mass and the long cylindrical vagina to the obliquely angled spermatheca. The duct between the female gland mass and the hermaphrodite duct is dilated at mid-length to form a small fertilizing chamber.

Discussion: This species is named to honour Mrs. Thelma W. Hartley, Melbourne, in recognition of her untiring work in the field of administration of the Malacological Society of Australia.

The new species is easily distinguished from *T. beta* by its tentaculiform foot-corners, semi-annulate rhinophores and greater number of rows of cerata in the right liver. The two species also differ in coloration though both have orange digestive glands in the cerata.

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EXPLANATION OF FIGURES

Fig. 1-5. *Nossis westralis* sp. nov.
1. Dorsal view of preserved holotype.
2. Ventral view of anterior part of body.
3. Ceras.
4. Right jaw from inside and denticles of masticatory edge.
5. Median and lateral radular teeth.

Fig. 6-10. *Eubranchus rubeolus* sp. nov.
6. Dorsal view of living slug.
7. Ceras.
8. Right jaw from inside and denticles of masticatory edge.
9. Median and lateral radular teeth.
10. Penis.

Fig. 11-15. *Trinchesia sororum* sp. nov.
11. Dorsal view of living slug.
12. Ceras.
13. Right jaw from inside.
14. Radular tooth.
15. Penis and tip of stylet.

Fig. 16-21. *Toorna thelmae* sp. nov.
16. Dorsal view of living slug.
17. Rhinophore.
18. Penis.
19. Right jaw from inside.
20. Ceras.
21. Radular tooth.

R. Burn delin.

Abbreviations: *a*—anus; *b*—genital aperture; *c*—cnidosac; *d*—tentacles; *e*—digestive gland; *f*—median radular tooth; *g*—lateral radular tooth; *h*—rhinophores; *i*—denticles of masticatory borders; *j*—penis; *l*—male atrium; *m*—lateral marking of body; *n*—penial stylet.